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Fish, C*reagrutus melasma* (Ostariophysi, Characiformes, Characidae): New Venezuelan distribution records

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Species of the genus *Creagrutus* Günther, 1864 inhabit a wide variety of Neotropical river basins from lower Mesoamerica (Panamá) to southern South America (Paraguay). The diversity of species in this genus is high in geomorphologic transition zones, such as piedmont hill regions between the Andes mountains and the plains, but they are also quite diverse in lowland alluvial plains (Vari and Harold 2001; Rodríguez-Olarte et al. 2007). This genus includes 66 species (Harold and Vari 1994; Vari and Harold 2001; Ribeiro et al. 2004; Torres-Mejía and Vari 2005), and at least fifteen of them have been reported from Venezuela (Vari and Harold 2001).

Creagrutus melasma (Vari et al. 1994) was described from northern Venezuela, from the Andean drainages of Táchira state, in the west, to the Caribbean drainages of Sucre state, in the east. It was also reported from many headwaters and Andean piedmont streams of the Orinoco basin as well as in the Tuy and Neverí rivers, which are part of the Caribbean slope. It is abundant in the Lake Valencia drainage from the Buey River (Burro Island) and around Manaure (Carabobo State). It has also been found from Guárico State in the Orituco River, Aragua state in the Cagua River, Carabobo state in the Guacara River and Portuguesa state in the Boconó, Guanare, and Las Marías rivers (Eigenmann 1920; Taphorn 1992; Vari et al. 1994; Lopez-Rojas and Bonilla-Ribero 2000; Mago-Leccia and Marín 2004).

We examined specimens from collections of the Museo de Ciencias Naturales Guanare, Universidad Nacional Experimental de los Llanos Occidentales "Ezequiel Zamora", Guanare, Venezuela (MCNG); Colección Regional de Peces, Universidad Centroccidental "Lisandro Alvarado", Barquisimeto, Venezuela (CPUCLA); and Museo de Ciencias Naturales Federico Carlos Lehmann – INCIVA, Cali, Colombia (IMCN). Identifications were made using Géry (1977), Taphorn (1992), Vari et al. (1994), Vari and Harold (2001), and Agudelo-Zamora et al. (2008). Measurements were taken with a digital caliper with precision of 0.1 mm. Scale and fin-ray counts were done with a stereoscope using methods of Harold and Vari (1994).

Creagrutus melasma specimens deposited at CPUCLA were collected during a series of expeditions to Falcón State between October 2005 and September 2006. Habitat was described using a modification of the methodology proposed by Barbour et al. (1999), and characterization of the aquatic environments was done following Bain (1999).

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All from Venezuela: MCNG 24622, 34 paratypes, Carabobo, Río Cúpira (sector La Cumaca), new bridge north of San Diego (10°16'15" N, 67°56'30" W); non-types: MCNG 15281, 5, Chirgua River, tributary of Pao River (10°8'30.1" N, 68°11'30.1" W); MCNG 6484, 4, Táchira, Tributary of Quinimarí River in the Junín bridge between Veracruz and El Corozo (7°40'0.1" N, 72°14'49.9" W); MCNG 11661, 21, Táchira, Torondoy, culvert pipe under bridge, San Cristóbal highway (7°34'19.9" N, 72°14'49.9" W); IMCN 211, 4, Táchira, Torondoy, culvert pipe under bridge, San Cristóbal highway (7°34'19.9" N, 72°14'49.9" W); MCNG 43235, 2, Quirimarí river before its confluence with Torbes River, (approx. 8° N, 71° E); MCNG 43264, 2, Quirimarí River before its confluence with Torbes River (7°40'59.2" N, 72°15'0" W); MCNG 46215, 6, Anzoátegui, Neverí River, mouth of Quebrada Vega Grande. Vega Grande.

The range extension for *Creagrutus melasma* now includes coastal drainages from the central western region of Venezuela (Appendix I). The new localities are: i) Tocuyo river basin (Lara State, between 520 and 680 meters above sea level), ii) Hueque river basin, and iii) Ricoa river basin (at Falcón State, very close to the "Cueva de la Quebrada del Toro" and "Juan Crisóstomo Falcón" National Parks in the Sierra de San Luis, between 127 and 295 m). New sites of capture belong to the Venezuelan Caribbean slope (Figure 1).

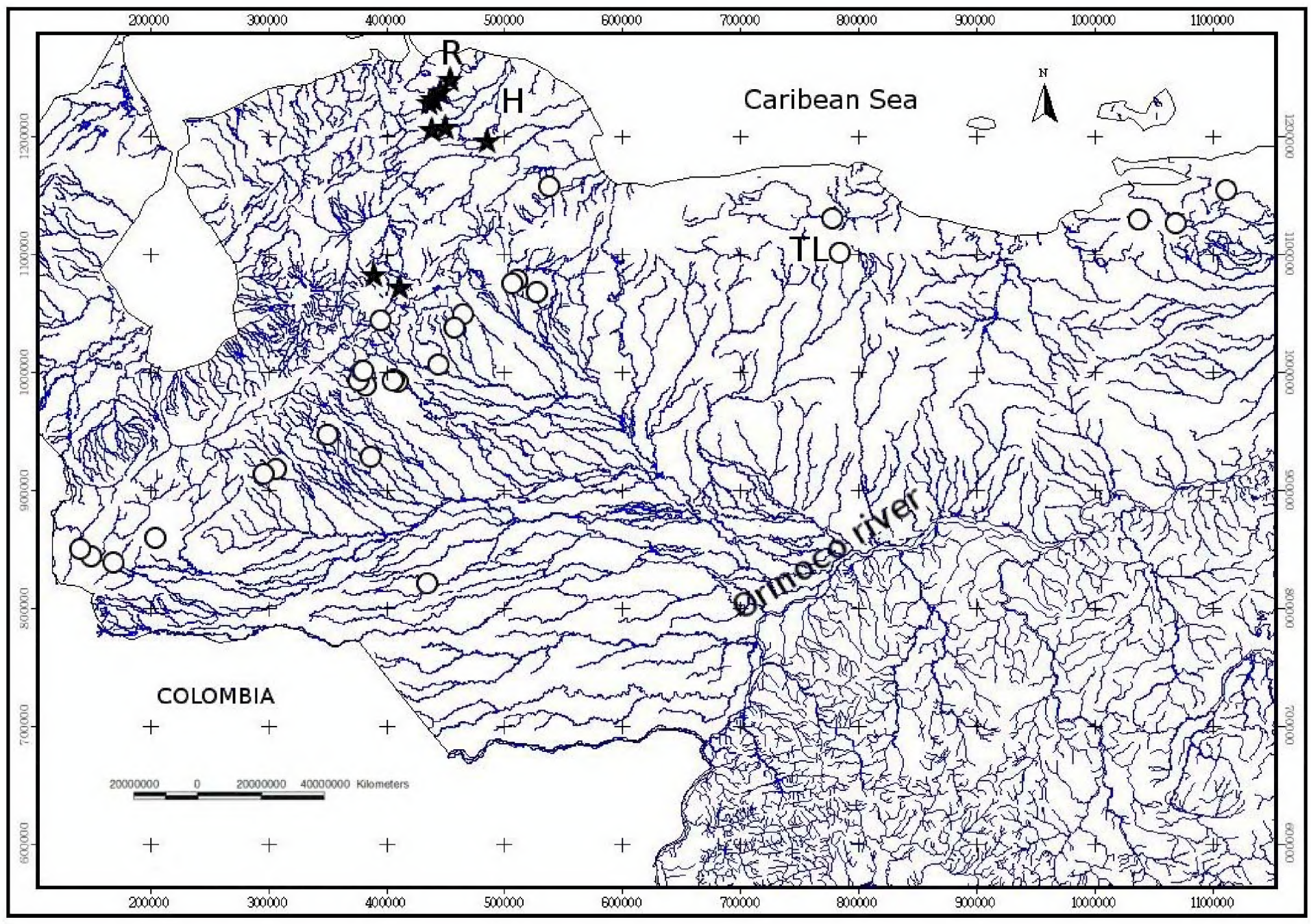

Figure 1. Area of distribution of *Creagrutus melasma*. Circles: distribution according to Vari et al. (1994) and Vari and Harold (2001). Black stars: new records. TL = type locality. H = Hueque River. R = Ricoa River.

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The Falcón State localities, specifically those from the Ricoa river, are the western limit of the range of *Creagrutus melasma* from the Caribbean dominion. The Caribbean dominion includes three provinces: Western, Central and Atlantic (Rodríguez-Olarte et al. 2009). The Western Caribbean province borders the eastern edge of Falcón province (Magdalena dominion). Samples from the Coro and Mitare river drainages revealed the presence of *Creagrutus hildebrandi* and *C. maracaiboensis*, species that are part of the Maracaibo basin fauna. We also found *Creagrutus lepidus* and *C. lassoi* from southeast Falcón State, in the Aroa and Tocuyo river basins.

Physical and chemical data from the sites where *C. melasma* was captured are show in Table 1. Riverbanks at collection sites usually had been partially deforested, with bands of native vegetation 6-12 m wide, and some showing signs of erosion. Although drainage patterns have not suffered changes in most places sampled, human impacts of agriculture as well as dredging for channelization are present (Rodríguez et al. 2005).

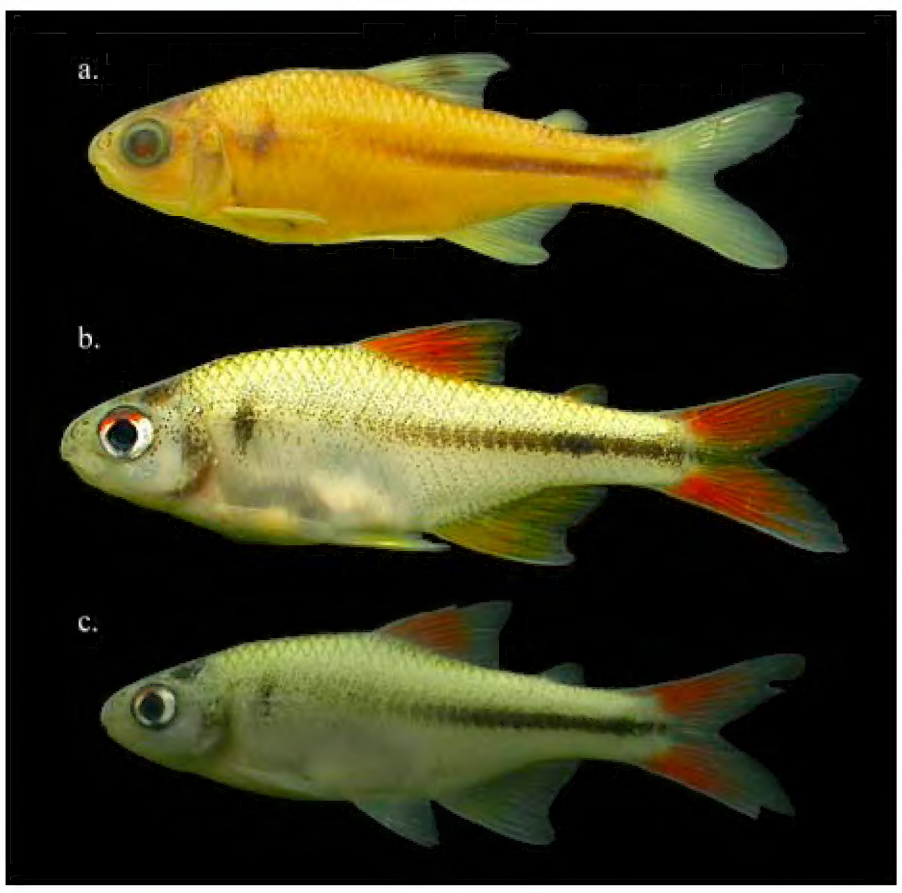

Figure 2. Morphologic and chromatic variation in different populations of *Creagrutus melasma* from Venezuela: a) Paratype MCNG 24622, 29.8 mm SL, Caño la Comarca, Carabobo State; b) CPUCLA 1986, 33 mm SL, Hueque river sector Colombia, Falcón State; c) CPUCLA 1243, 27.4 mm SL, Ricoa river sector San Pablo, Falcón State.

The specimens of *C. melasma* captured from new localities show differences in color intensity when compared with specimens from previously known localities (dorsal and anal fins more intensely red; pectoral and pelvic fins more intensely yellow). Figures 2B and 2C, show differences from the illustration of Román (1992:169), and also differs from specimens deposited at MCNG. The snout is more elongate in specimens from new records (Figure 2B), a feature more evident in specimens from near the "Cueva de la Quebrada del Toro". These specimens also have more elongate pelvic fins (extending beyond the first rays of the anal fin) than specimens from the llanos of the Orinoco in which the pelvic fins do not surpass the first rays of the anal fin (according to Taphorn 1992 and the original description of Vari et al. 1994). Specimens from Cercado creek (Guarico river drainage, Lara State) are larger than those (CPUCLA 609, 5 individuals, mean SL = 43 mm) reported in the original description (32.4 mm SL in holotype, 22.8 – 40.7 mm SL in paratypes), although Taphorn (1992) noted that this species can reach 50 mm SL.

Table 1. Physical features of collecting stations from two different drainages in Falcón State, A: Hueque river, B: Ricoa river ($\overline{X}$ ± SD), temperature is a punctual observation, altitude is given as the mean of the sampled stations, in Falcón State Venezuela, date: 18-March-06.

Parameter		A	B
Altitude	m.a.s.l	250 - 373	127 - 295
Depth	cm	19.3 ± 4.04	21.9 ± 6.41
Velocity	m/s	0.20 ± 0.08	0.35 ± 0.37
Substrate	Mud (%)	3.66 ± 4.09	3.34 ± 1.96
	Sand (%)	5.11 ± 5.10	0.70 ± 1.19
	Gravel (%)	13.3 ± 11.2	14.23 ± 10.8

The population of *Creagrutus melasma* from Quebrada del Toro is relatively isolated from others and shows some unusual color and morphological variations that require further study. Perhaps these variations are due to the isolation of these populations at the northwestern limit of their distribution. Quebrada del Toro is a small creek flowing into the lower Tocuyo river. Vicariance events associated with the orogenesis of the coastal mountain range and the Andes, and the resultant shifting of

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the proto-Orinoco river delta from east to west (Albert et al. 2006; Hoorn et al. 1995), isolated these coastal drainages approximately 11–15 m.y. in the Miocene (Lundberg et al. 1998). This was sufficient time to permit speciation in many groups, as is evidenced by the presence of many endemic species in this region: *Creagrutus crenatus* Vari and Harold, 2001; *Hyphessobrycon fernandezi* Fernández-Yépez, 1972; *Hypostomus pagei* Armbruster, 2003; *Austrofundulus leohoignei* Hrbek et al., 2005. Although preliminary analysis of morphometric characters did not provide sufficient evidence to permit taxonomic recognition of the Quebrada del Toro population, some minor differences were found. DNA sequence analysis might detect additional differences.

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Appendix 1: New distribution records of *Creagrutus melasma*: (All from Venezuela). **Lara State:** CPUCLA 607, 18 specimens, El Cercado stream, Tributary of Guárico river (09°41'58.5"N 69°47'57"W), 04 March 2003, D. Rodríguez-Olarte, J. Coronel; CPUCLA 609, 5, El Cercado stream, Tributary of Guárico river (09°41'58.5"N 69°47'57"W), 04 March 2003, D. Rodríguez-Olarte, J. Coronel; CPUCLA 830, 4, Tocuyo river, between Humocaro Bajo and Humocaro Alto (09°47'59.3"N 69°59'1.6"W), 16 October 2002, D. Rodríguez-Olarte, J. Coronel. **Falcón State** : CPUCLA 342, 109, National Park Cueva de la Quebrada del Toro (10°49'16.6"N 69°08'10"W) , 08 June 2002, D. Rodríguez-Olarte, J Coronel, H. Rivera, C. López; CPUCLA 346, 104, National Park Cueva de la Quebrada del Toro (10°49'16.6"N 69°08'10"W) , 08 June 2002, D. Rodríguez-Olarte, J. Coronel, H. Rivera, C. López; CPUCLA 352, 158, National Park Cueva de la Quebrada del Toro (10°49'16.6"N 69°08'10"W), 08 June 2002, D. Rodríguez-Olarte, J. Coronel, H. Rivera, C. López; CPUCLA 1243, 3, Río Ricoa, sector San Pablo (11°12'17.8"N 69°29'43.5"W), 19 October 2005, D. Rodríguez-Olarte, D. Taphorn, J. Coronel, A. Amaro, H. Rivera; CPUCLA 1627, 1, Macoruca stream, Tributary of Ricoa river (11°17'49.7"N 69°24'55.5"W), 18 March 2006, D. Rodríguez-Olarte, A. Amaro, H. Agudelo-Z., H. Rivera; CPUCLA 1259, 3, Hueque river, sector Quebracho (11°08'24.6"N 69°33'13.5"W), 19 October 2005, D. Rodríguez-Olarte, D. Taphorn, J. Coronel, A. Amaro, H. Rivera; CPUCLA 1661, 6, Hueque river, sector Quebracho (11°08'24.6"N 69°33'13.5"W), 25 April 2006, D. Rodríguez-Olarte, A. Amaro, H. Agudelo-Z., H. Rivera.